

# SEQUENCE LISTING

<110> Hitoshi, Yasumichi  
Anderson, David  
Rigel Pharmaceuticals, Inc.

<120> Cell Cycle Targets and Peptides

<130> 021044-002430PC

<140> US 10/531,492

<141> 2005-04-15

<150> US 60/422,912

<151> 2002-10-30

<150> US 60/460,845

<151> 2003-04-04

<150> WO PCT/US03/34669

<151> 2003-10-30

<160> 58

<170> PatentIn Ver. 2.1

<210> 1

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide 35,  
peptide 88, peptide 35/88

<400> 1

Arg	Leu	Arg	Arg	Ile	Cys	Ser	Gly	Ile	Leu	Leu	Ile	Arg	Arg	Ile	Leu
1				5					10					15	

Gly	Ile	Phe	Val
			20

<210> 2

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:C-terminus  
vector-derived sequence

<400> 2

Arg	Pro	Val	Arg
1			

<210> 3

<211> 5

<212> PRT

<213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:C-terminus  
 vector-derived sequence

<400> 3  
 Arg Pro Val Arg Pro  
 1 5

<210> 4  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide 38

<400> 4  
 Thr Ser Gly Leu Leu Lys Leu Val Gln Ala Lys Arg Lys Cys Cys Ile  
 1 5 10 15

Ser

<210> 5  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide 40

<400> 5  
 Arg Trp Asp Pro Thr Arg Leu Leu Arg Phe Arg Phe Leu Arg Met Leu  
 1 5 10 15

Val Arg Arg Ser  
 20

<210> 6  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide 41

<400> 6  
 Gly Arg Gly Cys Ile Phe Arg Trp Arg Arg Gly Leu Arg Gly Met Met  
 1 5 10 15

Arg Leu Phe Lys  
 20

<210> 7  
 <211> 7  
 <212> PRT  
 <213> Artificial Sequence



<400> 11  
ggaaggggat gtatcttttcg atggaggaga ggcctgcggg gaatgatgag actattttaag 60  
tag 63

<210> 12  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<221> MOD\_RES  
<222> (1)..(3)  
<223> Xaa = large hydrophobic amino acid selected from  
the group Leu, Ile, Phe, Met, Tyr or Trp, wherein  
at least one is Leu or Ile, Xaa at position 3 may  
be present or absent

<220>  
<221> MOD\_RES  
<222> (4)..(6)  
<223> Xaa = large hydrophobic amino acid selected from  
the group Leu, Ile, Phe, Met, Tyr or Trp, wherein  
at least one is Leu or Ile, Xaa at position 6 may  
be present or absent

<220>  
<221> MOD\_RES  
<222> (7)..(8)  
<223> Xaa = large hydrophobic amino acid selected from  
the group Leu, Ile, Phe, Met, Tyr or Trp, wherein  
at least one is Leu or Ile

<220>  
<223> Description of Artificial Sequence:peptide motif

<400> 12  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa  
1 5

<210> 13  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:linker

<400> 13  
Glu Glu Ala Ala Lys Ala  
1 5

<210> 14  
<211> 37  
<212> PRT  
<213> Artificial Sequence

```

<220>
<223> Description of Artificial Sequence:biotinylated
      peptide 40 fused to C-terminus of GFP

<220>
<221> MOD_RES
<222> (1)
<223> Xaa = biotinylated Gly

<400> 14
Xaa Met Asp Glu Leu Tyr Lys Glu Glu Ala Ala Lys Ala Arg Trp Asp
  1             5             10             15

Pro Thr Arg Leu Leu Arg Phe Arg Phe Leu Arg Met Leu Val Arg Arg
  20             25             30

Ser Arg Pro Val Arg
  35

<210> 15
<211> 37
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:inactive
      biotinylated alanine mutant of peptide 40

<220>
<221> MOD_RES
<222> (1)
<223> Xaa = biotinylated Gly

<400> 15
Xaa Met Asp Glu Leu Tyr Lys Glu Glu Ala Ala Lys Ala Arg Trp Asp
  1             5             10             15

Pro Thr Arg Ala Leu Arg Ala Arg Phe Ala Arg Ala Leu Val Arg Arg
  20             25             30

Ser Arg Pro Val Arg
  35

<210> 16
<211> 33
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:peptide 41
      fused to C-terminus of GFP

<400> 16
Gly Met Asp Glu Leu Tyr Lys Glu Glu Ala Ala Lys Ala Gly Arg Gly
  1             5             10             15

```

Cys Ile Phe Arg Trp Arg Arg Gly Leu Arg Gly Met Met Arg Leu Phe  
20 25 30

Lys

<210> 17  
<211> 54  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:nucleotide  
sequence of peptide 38 with in-frame stop codon

<400> 17  
actagtgggt tgctgaagct ggtgcaggct aagcgtaagt gttgtattag ttag 54

<210> 18  
<211> 25  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:peptide #40

<400> 18  
Arg Trp Asp Pro Thr Arg Leu Leu Arg Phe Arg Phe Leu Arg Met Leu  
1 5 10 15

Val Arg Arg Ser Arg Pro Val Arg Pro  
20 25

<210> 19  
<211> 25  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:peptide #88

<400> 19  
Arg Leu Arg Arg Ile Cys Ser Gly Ile Leu Leu Ile Arg Arg Ile Leu  
1 5 10 15

Gly Ile Phe Val Arg Pro Val Arg Pro  
20 25

<210> 20  
<211> 40  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:variant of  
synthetic peptide #40 with N-terminus seven Lys  
and linker, K7\_40

<400> 20  
 Lys Lys Lys Lys Lys Lys Lys Gly Gly Glu Glu Ala Ala Lys Ala Arg  
     1                    5                    10                    15  
 Trp Asp Pro Thr Arg Leu Leu Arg Phe Arg Phe Leu Arg Met Leu Val  
                     20                    25                    30  
 Arg Arg Ser Arg Pro Val Arg Pro  
                     35                    40

<210> 21  
 <211> 40  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:variant of  
       synthetic peptide #40 with N-terminus seven Lys  
       and linker and alanine mutated residues, K7\_40 M

<400> 21  
 Lys Lys Lys Lys Lys Lys Lys Gly Gly Glu Glu Ala Ala Lys Ala Arg  
     1                    5                    10                    15  
 Trp Asp Pro Thr Arg Ala Leu Arg Ala Arg Phe Ala Arg Ala Leu Val  
                     20                    25                    30  
 Arg Arg Ser Arg Pro Val Arg Pro  
                     35                    40

<210> 22  
 <211> 35  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:variant of  
       synthetic peptide #41 with N-terminus seven Lys  
       and linker, K7\_41

<400> 22  
 Lys Lys Lys Lys Lys Lys Lys Gly Gly Glu Glu Ala Ala Lys Ala Gly  
     1                    5                    10                    15  
 Arg Gly Cys Ile Phe Arg Trp Arg Arg Gly Leu Arg Gly Met Met Arg  
                     20                    25                    30  
 Leu Phe Lys  
                     35

<210> 23  
 <211> 35  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:variant of  
 synthetic peptide #41 with N-terminus seven Lys  
 and linker and alanine mutated residues, K7\_41 M

<400> 23  
 Lys Lys Lys Lys Lys Lys Lys Gly Gly Glu Glu Ala Ala Lys Ala Gly  
 1 5 10 15  
 Arg Gly Cys Ile Phe Arg Ala Arg Arg Gly Ala Arg Gly Met Ala Arg  
 20 25 30  
 Ala Phe Lys  
 35

<210> 24  
 <211> 5  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:5 arginine  
 residues

<400> 24  
 Arg Arg Arg Arg Arg  
 1 5

<210> 25  
 <211> 8  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:linker

<400> 25  
 Gly Gly Glu Glu Ala Ala Lys Ala  
 1 5

<210> 26  
 <211> 13  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:C-terminus of  
 GFP and linker fused to biotinylated peptide 40,  
 41 and 35

<400> 26  
 Gly Met Asp Glu Leu Tyr Lys Glu Glu Ala Ala Lys Ala  
 1 5 10



<210> 27  
 <211> 200  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:poly Gly  
 flexible linker

<220>

<221> MOD\_RES

<222> (6)..(200)

<223> Gly residues from position 6 to 200 may be present  
 or absent

<400> 27

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 1 5 10 15

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 20 25 30

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 35 40 45

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 50 55 60

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 65 70 75 80

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 85 90 95

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 100 105 110

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 115 120 125

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 130 135 140

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 145 150 155 160

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 165 170 175

Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly Gly  
 180 185 190

Gly Gly Gly Gly Gly Gly Gly Gly  
 195 200

<210> 28  
 <211> 24  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:proliferating  
 cell nuclear antigen (PCNA)-binding C-terminal  
 peptide of tumor suppressor p21 (p21C)

<400> 28  
 Lys Arg Arg Gln Thr Ser Met Thr Asp Phe Tyr His Ser Lys Arg Arg  
 1 5 10 15  
 Leu Ile Phe Ser Lys Arg Lys Pro  
 20

<210> 29  
 <211> 25  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide #40  
 alanine mutant (M15A)

<400> 29  
 Arg Trp Asp Pro Thr Arg Leu Leu Arg Phe Arg Phe Leu Arg Ala Leu  
 1 5 10 15  
 Val Arg Arg Ser Arg Pro Val Arg Pro  
 20 25

<210> 30  
 <211> 25  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide #40  
 alanine mutant (L13A/M15A)

<400> 30  
 Arg Trp Asp Pro Thr Arg Leu Leu Arg Phe Arg Phe Ala Arg Ala Leu  
 1 5 10 15  
 Val Arg Arg Ser Arg Pro Val Arg Pro  
 20 25

<210> 31  
 <211> 25  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide #40  
 alanine mutant (F10A/L13A/M15A)

<400> 31  
 Arg Trp Asp Pro Thr Arg Leu Leu Arg Ala Arg Phe Ala Arg Ala Leu  
     1                    5                    10                    15  
 Val Arg Arg Ser Arg Pro Val Arg Pro  
             20                    25

<210> 32  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide #41  
           alanine mutant (L18A)

<400> 32  
 Gly Arg Gly Cys Ile Phe Arg Trp Arg Arg Gly Leu Arg Gly Met Met  
     1                    5                    10                    15  
 Arg Ala Phe Lys  
             20

<210> 33  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide #41  
           alanine mutant (M16A/L18A)

<400> 33  
 Gly Arg Gly Cys Ile Phe Arg Trp Arg Arg Gly Leu Arg Gly Met Ala  
     1                    5                    10                    15  
 Arg Ala Phe Lys  
             20

<210> 34  
 <211> 20  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide #41  
           alanine mutant (L12A/M16A/L18A)

<400> 34  
 Gly Arg Gly Cys Ile Phe Arg Trp Arg Arg Gly Ala Arg Gly Met Ala  
     1                    5                    10                    15  
 Arg Ala Phe Lys  
             20

<210> 35  
 <211> 25  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide #88  
         alanine mutant (I18A)  
  
 <400> 35  
 Arg Leu Arg Arg Ile Cys Ser Gly Ile Leu Leu Ile Arg Arg Ile Leu  
   1                  5                  10                  15  
  
 Gly Ala Phe Val Arg Pro Val Arg Pro  
                   20                  25

<210> 36  
 <211> 25  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide #88  
         alanine mutant (L16A/I18A)  
  
 <400> 36  
 Arg Leu Arg Arg Ile Cys Ser Gly Ile Leu Leu Ile Arg Arg Ile Ala  
   1                  5                  10                  15  
  
 Gly Ala Phe Val Arg Pro Val Arg Pro  
                   20                  25

<210> 37  
 <211> 25  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide #88  
         alanine mutant (I12A/L16A/I18A)  
  
 <400> 37  
 Arg Leu Arg Arg Ile Cys Ser Gly Ile Leu Leu Ala Arg Arg Ile Ala  
   1                  5                  10                  15  
  
 Gly Ala Phe Val Arg Pro Val Arg Pro  
                   20                  25

<210> 38  
 <211> 10  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:leucine-rich  
         motif of HIV-1 Rev (amino acid position 75-84)

<400> 38  
 Leu Pro Pro Leu Glu Arg Leu Thr Leu Asp  
 1 5 10

<210> 39  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:leucine-rich  
 motif of Mitogen-activated protein kinase kinase  
 1, MAPKK (amino acid position 33-43)

<400> 39  
 Leu Gln Lys Lys Leu Glu Glu Leu Glu Leu Asp  
 1 5 10

<210> 40  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:leucine-rich  
 motif of HTLV-1 Rex (amino acid position 82-93)

<400> 40  
 Leu Ser Ala Gln Leu Tyr Ser Ser Leu Ser Leu Asp  
 1 5 10

<210> 41  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:leucine-rich  
 motif of Human homologue of mouse double minute  
 2, Hdm-2 (amino acid position 190-200)

<400> 41  
 Ile Ser Leu Ser Phe Asp Glu Ser Leu Ala Leu Cys  
 1 5 10

<210> 42  
 <211> 11  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:leucine-rich  
 motif of Protein kinase inhibitor, PKI (amino acid  
 position 38-48)

<400> 42  
Leu Ala Leu Lys Leu Ala Gly Leu Asp Ile Asn  
1 5 10

<210> 43  
<211> 17  
<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:C-terminal 17  
residues of cell division cycle 42 isoform 2,  
CDC42C (amino acid position 183-191)

<400> 43  
Ala Ala Leu Glu Pro Pro Glu Thr Gln Pro Lys Arg Lys Cys Cys Ile  
1 5 10 15

Phe

<210> 44  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide  
#38Ndelta(1-8)

<400> 44  
Gln Ala Lys Arg Lys Cys Cys Ile Ser  
1 5

<210> 45  
<211> 4  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide  
#38Ndelta(1-13)

<400> 45  
Cys Cys Ile Ser  
1

<210> 46  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide  
#38(T1A)

<400> 46  
Ala Ser Gly Leu Leu Lys Leu Val Gln Ala Lys Arg Lys Cys Cys Ile  
1 5 10 15

Ser

<210> 47  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:peptide  
#38(S2A)

<400> 47  
Thr Ala Gly Leu Leu Lys Leu Val Gln Ala Lys Arg Lys Cys Cys Ile  
1 5 10 15

Ser

<210> 48  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:peptide  
#38(G3A)

<400> 48  
Thr Ser Ala Leu Leu Lys Leu Val Gln Ala Lys Arg Lys Cys Cys Ile  
1 5 10 15

Ser

<210> 49  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:peptide  
#38(L4A)

<400> 49  
Thr Ser Gly Ala Leu Lys Leu Val Gln Ala Lys Arg Lys Cys Cys Ile  
1 5 10 15

Ser

<210> 50  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence:peptide  
       #38 (L5A)  
  
 <400> 50  
 Thr Ser Gly Leu Ala Lys Leu Val Gln Ala Lys Arg Lys Cys Cys Ile  
       1                  5                  10                  15  
  
 Ser  
  
 <210> 51  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide  
       #38 (K6A)  
  
 <400> 51  
 Thr Ser Gly Leu Leu Ala Leu Val Gln Ala Lys Arg Lys Cys Cys Ile  
       1                  5                  10                  15  
  
 Ser  
  
 <210> 52  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide  
       #38 (L7A)  
  
 <400> 52  
 Thr Ser Gly Leu Leu Lys Ala Val Gln Ala Lys Arg Lys Cys Cys Ile  
       1                  5                  10                  15  
  
 Ser  
  
 <210> 53  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide  
       #38 (V8A)  
  
 <400> 53  
 Thr Ser Gly Leu Leu Lys Leu Ala Gln Ala Lys Arg Lys Cys Cys Ile  
       1                  5                  10                  15  
  
 Ser



<210> 54  
 <211> 17  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide  
           #38 (C14A)  
  
 <400> 54  
 Thr Ser Gly Leu Leu Lys Leu Val Gln Ala Lys Arg Lys Ala Cys Ile  
   1                  5                  10                  15  
  
 Ser

<210> 55  
 <211> 24  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:peptide 40  
  
 <400> 55  
 Arg Trp Asp Pro Thr Arg Leu Leu Arg Phe Arg Phe Leu Arg Met Leu  
   1                  5                  10                  15  
  
 Val Arg Arg Ser Arg Pro Val Arg  
                   20

<210> 56  
 <211> 12  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:Human homologue  
           of mouse double minute 2, HDM-2  
  
 <400> 56  
 Leu Ser Leu Ser Phe Asp Glu Ser Leu Ala Leu Cys  
   1                  5                  10

<210> 57  
 <211> 13  
 <212> PRT  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence:N-terminal  
           sequence of peptides 35, 40 and 41 synthesized  
           with C-terminus of GFP and spacer residues  
  
 <220>  
 <221> MOD\_RES  
 <222> (1)  
 <223> Xaa = biotinylated Gly

<400> 57  
Xaa Met Asp Glu Leu Tyr Lys Glu Glu Ala Ala Lys Ala  
1 5 10

<210> 58  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:C-terminus  
of GFP

<400> 58  
Met Asp Glu Leu Tyr Lys  
1 5